

LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (previously presented) An overcurrent protection circuit for a power switching transistor wherein the power switching transistor has a control electrode and two main electrodes, the circuit comprising:

a sensing circuit, including a protection switch, for sensing the rate of change of voltage with respect to time at one of the main electrodes of the power switching transistor, and for controlling the protection switch to remove a control signal to the control electrode of the power switching transistor to turn off the power switching transistor if the rate of change exceeds a first predefined value.

2. (previously presented) The circuit of claim 1, wherein the sensing circuit comprises a capacitor coupled to a main electrode of the power switching transistor, and a resistor coupled to receive a pulse of current from said capacitor, such that a voltage developed across the resistor turns on the protection switch if the voltage across the resistor exceeds a second predefined value.

3. (original) The circuit of claim 2, wherein the protection switch comprises a transistor.

4. (original) The circuit of claim 3, wherein the protection switch comprises a bipolar junction transistor.

5. (original) The circuit of claim 4, wherein the resistor is coupled across the base-emitter junction of the protection transistor.

6. (original) The circuit of claim 4, further comprising a diode coupled across the base-emitter junction of the protection transistor to discharge the capacitor.

7. (original) The circuit of claim 3, wherein the protection switch comprises a field effect transistor (FET).

8. (original) The circuit of claim 1, wherein the power switching transistor comprises a field effect transistor (FET).

9. (currently amended) An overcurrent protection circuit for a power switching transistor wherein the power switching transistor has a control electrode and two first and second main electrodes, the first main electrode being coupled to a storage capacitor, the circuit comprising:

a protection transistor coupled to the control electrode of the power switching transistor, the protection transistor having a control electrode; and

a sensing capacitor coupled to the first main electrode of the power switching transistor, the capacitor being adapted to generate a current representative of an R-C circuit for sensing the rate of change of voltage with respect to time across the storage capacitor; at one of the main electrodes of the power switching transistor; and

a sensing resistor coupled to the control electrode of the protection transistor and adapted to receive the current from the sensing capacitor;

wherein the protection transistor is adapted for controlling the protection transistor to remove a control signal to the control electrode of the power switching transistor to turn off the power switching transistor if the rate of change exceeds a first predefined rate of change value.

10. (currently amended) The circuit of claim 9, wherein the R-C circuit comprises a capacitor coupled to a main electrode of the power switching transistor, and a sensing resistor is adapted coupled to receive a pulse of current from said capacitor and to develop a sensing voltage across the sensing resistor to turn on the protection transistor if the sensing voltage across the resistor exceeds a second predefined sensing voltage value.

11. (original) The circuit of claim 10, wherein the protection transistor comprises a bipolar junction transistor.

12. (original) The circuit of claim 11, wherein the resistor is coupled across the base-emitter junction of the protection transistor.

13. (original) The circuit of claim 10, wherein the protection transistor comprises a field effect transistor (FET).

14. (original) The circuit of claim 9, wherein the power switching transistor comprises a field effect transistor (FET).

15. (new) A power supply comprising:
a power switching transistor having a control electrode and two main electrodes;
a storage capacitor operable to draw current through the main electrodes of the power switching transistor when the power switching transistor is conductive; and
an overcurrent protection circuit operable to sense the rate of change of voltage with respect to time across the storage capacitor, and to remove a control signal to the control electrode of the power switching transistor to turn off the power switching transistor if the rate of change exceeds a predefined rate of change value.

16. (new) The power supply of claim 15, wherein the overcurrent protection circuit comprises:
a protection switch coupled to the control electrode of the power switching transistor, the protection switch adapted to remove the control signal to the control electrode of the power switching transistor to turn off the power switching transistor if the rate of change exceeds the predefined rate of change value.

17. (new) The power supply of claim 16, wherein the storage capacitor is coupled between one of the main electrodes of the power switching transistor and a circuit common;
the overcurrent protection circuit further comprising:
a protection capacitor coupled to the one of the main electrodes of the power switching transistor, the protection capacitor responsive to the rate of change of voltage with respect to time

across the storage capacitor; and

a protection resistor coupled to the control electrode of the protection switch and adapted to develop a voltage in response to the rate of change of voltage with respect to time across the storage capacitor;

wherein the protection transistor is adapted to turn off the power switching transistor if the voltage across the protection resistor exceeds a predefined voltage value.

18. (new) The power supply of claim 17, wherein the protection capacitor is operable to generate a current in response to the rate of change of voltage with respect to time across the storage capacitor, and the protection resistor is operable to develop the voltage in response to receiving the current from the protection capacitor.

19. (new) The power supply of claim 18, wherein the protection capacitor comprises a first terminal coupled to the junction of the one of the main electrodes of the power switching transistor and the storage capacitor and a second terminal coupled to a first terminal of the protection resistor, the protection resistor comprising a second terminal coupled to the circuit common, the junction of the second terminal of the protection capacitor and the first terminal of the protection resistor coupled to a control electrode of the protection switch.